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MINNESOTA DEPARTMENT OF ECONOMIC SECURITY

RESEARCH AND STATISTICAL SERVICES OFFICE

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Manuscripts of articles are welcomed and should be submitted to the Editor. Articles on labor market conditions and the economic welfare of Minnesota workers are preferred, but subjects which can be shown to be closely related to general economic conditions within the State will also be considered. Articles should be submitted complete with tables and graphs. Length generally should not exceed the equivalent of ten single-spaced typewritten pages, including graphs, references, and notes.

All signed articles appearing in this publication together with the Editorial Comment represent the views of the author or editor and not necessarily those of the Department. Questions or comments to the authors may be directed to the Research and Statistical Services Office of the Minnesota Department of Economic Security, 390 N. Robert Street, St. Paul, Minnesota, 55101 or (612) 297-6545.

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Editorial Comment

SOCIAL SECURITY: RHETORIC AND REALITY

By R. Pinola

Election compaigns are notorious for rhetoric and weak on analysis. The malady is not restricted to politicians or campaign managers, it extends to all segments of society, from news media to interest groups to the citizenry. With respect to our Social Security system there is still the mistaken notion that benefits are in exact proportion to contributions paid. Nothing could be further from the truth. Benefit levels are actually determined by the productiveness of our economy, which is reflected in economic growth, and the social consciousness of the citizenry. The mere fact that contributions are paid on covered earnings which, in turn, are used to determine benefits, is more an administrative convenience and a method of handling the issue of equity between persons than as a basis for determining the level of benefits. By this we do not mean to imply that payroll taxes do not influence the level of benefits. They do, but it is the taxes paid by those still working that will determine how much I will receive in my retirement years.

Although social insurance differs from private insurance in that it uses a different concept of actuarial soundness, 1/ the benefits that each can provide depends on the earning power of the system. In the case of private insurance, it is the returns on invested premiums, both before and after the payment of annuity begins, that determine payback levels. In the case of the Social Security system it depends on the taxing power of the State. In the final analysis, however, the earning power and benefits of both systems depends on economic growth.

When the Social Security system was established, it was emphasized that benefits should be based on contributions. This view has been restated in Congressional hearings and deliberations and is still invoked in much of the recent debate on benefit levels. Despite the rhetoric, benefit levels have grown in relation to our perceived ability to soften the burden for our aged. Given robust economic growth, it is possible to raise benefit levels without any noticeable pain to those still working. Once the economy enters a period of less ample growth, the shifting of resources from one group to another to raise benefit levels becomes more difficult. However, with the money machine and inflation obscuring our vision of reality, we can be led to believe that raising benefit levels is relatively painless. How else can one explain the legislative experience of the 1970's?

To illustrate the divergence between contributions paid and benefits received and, therefore, the extent of resource shifting required, we calculated the payback to a person who first came under the Social Security system in 1951 and retired at the age of 62 in 1982 with earnings at least equal to the taxable wage ceiling in each of the intervening years. 2/ In deriving the investment value

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1/ Under private insurance actuarial soundness calls for a reserve fund sufficient to pay all existing liabilities (claims), whereas under social insurance actuarial soundness is deemed to exist when long-run revenues equal long-run costs. This difference in defining actuarial soundness is predicated on the assumed operation in perpetuity of the Social Security system. Hence, reserves are needed only to cover temporary shortfalls in revenue, and the system operates as an intergenerational distribution of income through pay-as-you-go financing.

2/ By so doing, we are able to show the rate of return under the most conservative scenario since a lower wage rate would yield considerably higher returns due to the high redistribution character of the benefit formula.

of combined employer-employee contributions, we used a rather liberal 6 percent rate of interest for compounding purposes. At the end of 1981, the investment value of the combined contributions was $36,660. We then determined the monthly benefit amount for our retired person based on his covered taxable earnings record. This came to $510 per month in 1982. Making the rather heroic assumption that benefit levels in subsequent years would remain at the 1982 level, and that our retiree would live 10 years beyond the date of retirement, we used the capital recovery formula to estimate the rate of return on the $36,660 investment of combined contributions plus interest. The beneficiaries rate of return roughly was 11 percent, or about 5 percent more that the Social Security trust fund would yield on his 1979 investment. Had we used a 5 percent annual COLA adjustment to benefits for each of the years succeeding 1982, the rate of return would have been slightly in excess of 16 percent.

It should be noted that not only does the retiree obtain retirement benefits substantially in excess of the present value of contributions, but that the system provides survivorship insurance as well to children under 18 years of age and to the widow in whose care such children are left. Moreover, our calculation of the rate of return was for a person who had earnings in each year that were at least equal to the taxable wage ceiling. Because Social Security is a redistributional income maintenance program, a person with a lower wage rate would contribute proportionately less but receive benefits that were not scaled downward by the same relative amount. In this case the rate of return would be higher than in our conservative estimate described above. In any event, the rates of return received by beneficiaries is substantially greater than the yield on the trust fund and, therefore, represents a considerable favorable shift of resources to beneficiaries which can continue to be made only if robust economic growth can be achieved. It has become increasingly evident that Congress will need to pay more attention to the relationship between benefit levels and economic growth because the redistribution of wealth from workers paying payroll taxes to Social Security beneficiaries can become very painful in the absence of economic growth.

One of the primary reasons that the Old Age and Survivors Insurance program has faced impending solvency problems in the 1970's is that benefit levels were adjusted upward on the basis of presumed rates of growth in the economy. No sooner had a new schedule of payroll taxes been established to finance the higher level of benefits than it became obsolete in the face of unrealized growth. On the other hand, higher payroll taxes increased the burden on the employed and, in turn, may have limited the very growth needed. Unless robust economic growth can be achieved, the Nation may be faced with yet another Catch-22 problem.

Research Summaries

THE DISPLACED WORKER

By Bruce Steuernagel

The depressed conditions in the Nation's basic steel and automobile industries has resulted in the permanent closing of numerous factories and plants throughout the country, especially in the industrial Midwest. Once again the problem of how to deal with the unemployment situation of "dislocated workers", those who have lost jobs because of a plant closure or who are unemployed and have extremely limited opportunity for re-employment in their occupation, is being addressed by new employment and training legislation.1/ This article summarizes some of the findings of a book entitled Plant Closings and Economic Dislocation.2/ The book reviews 20 of the most significant plant-closing research studies done over the past twenty years in the U.S. and Canada. The authors reviewed the literature concerning the reemployment experiences of displaced workers, responses to plant closings from management, union and community, the mental health outcomes of unemployment, and the participation of workers in transfer, retraining, retirement, and early notice programs. The rest of this article will focus on two of these areas, the job search and reemployment experiences of the workers and the impact of retraining programs.

Up to this point, most of the case studies of plant closing have focused on manufacturing plants, such as those in the meat packing industry or auto industry. They also have researched the impact of the closing on the workers who remained when the plant closed its gates for the final time rather than studying the overall contraction of the plant's work force prior to closing. As a result of these two shortcomings, the displaced workforce demographic data tends be biased towards older, male workers because females and minorities are underrepresented. The age of dislocated workers is high due to reverse seniority layoff rules and the fact that younger workers (under 40 years old) have been released in the months when the firm's workforce was contracting. Because of their age, older workers tend to have low educational attainment, a factor which significantly influences their employment development and retraining decisions.

Past case studies have investigated the job search activity of displaced workers. They have generally found that the initiation of a job search is associated with the occupational status of the worker and the availability of severance benefits. A higher percentage of white-collar than blue-collar workers leave before the plant closes. This may be because they are better able to take time off to search for a job, may be more intense and better organized in their job search, and may be in touch with better information channels. Severance benefits appear to have a negative effect on blue-collar job search. The workers' assessment of the availability of other jobs in the community, of course, also significantly influences their job search activity. With regard to where displaced workers look for new employment, occupational status again played a significant role. White-collar workers are more likely to extend the boundaries of their labor market. More males than females are

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1/ Particularly the Job Training and Partnership Act of 1982.

2/ Plant Closings and Economic Dislocation, Gordus, Jarley, Ferman, W.E. Upjohn Institute for Employment Research, Kalamazoo, Michigan, 1981.

willing to relocate. This is probably due to the fact that at the time these studies were conducted, females' secondary income status in a household reduced the opportunity for relocation. Women may also put a high priority on family or other ties to a community and be less willing to move. As would be expected, younger workers were more likely to move than older workers who again may have stronger community associations and take into consideration the cost of the move in relationship to the shorter length of their future working life.

The studies generally found that older, unskilled workers were more likely to use formal placement assistance, possibly as a way to compensate for job market disadvantages they felt they had. For most displaced workers, direct application and job leads by relatives or friends proved to be the most effective way to find work. Young workers and those with transferable skills are most likely to find reemployment. However, the studies showed that the average spell of unemployment following a plant closing ranges from 16 to 22 weeks. Significantly, many of the workers who did find employment changed occupations, and such changes, especially for unskilled and semi-skilled workers, were into jobs requiring less skill and offering lower income.

One of the proposed solutions for displaced workers joblessness is retraining. In seven of the 27 case studies reviewed, workers were offered retraining. The participation rates of workers in retraining ranged from a high of 16.4 percent to a low of 6 percent. The demographics of the workers has much to do with the acceptance of retraining as an option. As we have mentioned, older workers tend to dominate the work force of a closed plant. For them retraining is less attractive because they have a shorter amount of time to accumulate the benefits of retraining. They see their chance of getting a job in a new occupation even with training but no experience as being remote. Also there may be a significant identification with their old occupation which they psychologically do not want to part with. According to the studies, financial support has generally been inadequate to keep workers from dropping out of retraining. There is no research that presents cost-benefit analyses of retraining programs for displaced workers. Also, the authors concluded that there was insufficient evidence to draw conclusions about the effectiveness of retraining as an unemployment-reducing or employment opportunity - expanding tool.

After reviewing some of the programs tried up to this point, the authors propose a program which differs from those tried in the past in several respects. First, it offers more than one activity designed to facilitate reemployment. Management would adopt the policy of early notification of the plant closing, allow time off for interviewing, possibly retain the services of a team which would offer employability development programs prior to the closing. When possible, the options of transfer, retraining, and employability development assistance should be offered. Second, coordination between management, labor, and the community is needed to provide services for personal, family, and health problems during a transition period. Third, local education and employment service agencies are encouraged to provide training based on a knowledge of local labor needs and forecasts of future labor market trends. These coordinated local efforts will provide a sound basis for long-term economic development efforts in the area. In the final analysis, the success of a program for displaced workers depends to a great deal on the local labor market and the health of the national and regional economy.

The Job Market

THE FINANCE INDUSTRY

By Bev Jones

Employment in the Finance Industry has suffered little from the general business cycle. The fairly steady growth over the past 20 years has resulted in a doubling of employment since 1960. While most industries in Minnesota have posted losses in the 1982 monthly employment estimates when compared to year-ago figures, the Finance Industry has shown modest gains. This article will look briefly at the Finance Industry; its composition, employment, location, and occupational staffing patterns.

The Industry

The Finance Industry can be broken down into three major components: Banking; Credit Agencies other than Banks; and Security and Commodity Brokers, Dealers, Exchanges, and Services. Banking consists of institutions which are engaged in deposit banking or closely related functions, including fiduciary activities. Included in Banking are institutions such as the Federal Reserve Banks, Commerical and Stock Savings Banks, Mutual Savings Banks, and some Trust Companies. The Credit Agency group is comprised of establishments engaged in extending credit in the form of loans, but not engaged in deposit banking. This group includes Rediscount and Financial Institutions for Credit Agencies other than Banks, Savings and Loan Associations, Agricultural Banking Credit Institutions, and Mortgage Banks and Brokers. The final major division, Security and Commodity Brokers and Dealers, includes establishments engaged in the underwriting, purchase, sale, or brokerage of securities and other financial contracts on their own account or for the account of others; exchanges, exchange clearinghouses, and other services allied with the exchange of securities and commodities. This group includes Security Brokers, Dealers, and Flotation Companies, Commodity Contract Brokers and Dealers, Security and Commodity Exchange, and Allied Services.

There are nearly 1,850 Finance firms employing over 46,000 workers in the State, accounting for approximately three percent of the State's nonagricultural wage and salary employment. Slightly more than half of this employment is in the Minneapolis-St. Paul SMSA. Two thirds of the employment is in Banking, 22 percent in Credit Agencies other than Banking, and the remainder in Security and Commodity Brokers and Dealers.

Occupational Staffing Patterns

Occupational staffing patterns for the Finance Industry, as shown on Table I, indicate that 80 to 85 percent of the workers fall into two broad occupational categories; namely, Managers, Officials, and Proprietors (28.7 to 33.4 percent) and Clerical Workers (52.4 to 53.9 percent). Looking at these staffing patterns during the time period 1970 to 1985, a definite trend toward a higher proportion of Managerial employees can be seen.1/ The number of Bank and Financial Managers, which comprise approximately 82 percent of the Managers, Officials, and Proprietors category in the Finance Industry, grew at a faster pace than the industry as a whole. They increased by nearly 52 percent from 1970 to 1978 and are projected to climb another 45 percent to 14,500 by 1985.

1/ All references to 1985 employment or staffing patterns are based on data from Minnesota Employment Outlook to 1985, Minnesota Department of Economic Security, Research and Statistical Services Office, January 1981.

Although the proportion of Clerical workers in this industry is declining slightly, they comprise more than one-half of all the workers in Finance. Over two-thirds of the Clerical workers in this industry fall into three occupations; namely, Bank Tellers (34.0 percent), Secretaries and Typists (20.8 percent) and Bookkeepers (14.0 percent). The slower growth in clerical jobs is mainly due to automation.

Professional, Technical, and Kindred Workers comprise approximately six percent of this industry. The top four occupations in Finance are Accounts (51.2 percent), Computer Specialists, Programmers, and Analysts (14.8 percent), Personnel and Labor Relations workers (6.6 percent), and Economists (6.5 percent). The number of Sales workers in the Finance Industry is expected to expand by close to 30 percent from 1978 to 1985. However, the proportion of Sales workers in this industry is edging downward. The only other occupational category with significant employment is Services; two-thirds of which are Cleaning Service workers and most of the remainder are Security Guards.

Employment in all but two of the occupations mentioned above is expected to increase at a faster rate than total employment in Minnesota. The number of Computer Specialists and Bookkeepers is expected to increase at about the same pace as total employment.

TABLE I

Occupational Staffing Patterns For the Finance Industry2/

Occupational Groups	Percent of Industry		
	1970	1978	1985
Professional, Technical, & Kindred	5.7	6.4	6.0
Managers, Officals, & Proprietors	28.7	32.0	33.4
Sales	8.1	5.2	4.9
Clerical	53.9	53.2	52.4
Craft & Kindred	0.6	0.5	0.5
Operatives	0.3	0.3	0.3
Service	2.6	2.5	2.5
Laborers except Farm	0.0	0.0	0.0
Farm Laborers	0.0	0.0	0.0

2/ Source: Minnesota Employment Outlook to 1985, Minnesota Department of Economic Security, Research and Statistical Services Office, January 1981.

SUPPLY/DEMAND FOR SPECIFIC OCCUPATIONS, OCTOBER 1982[1/]

By Sue Hamper

MINNESOTA

Shortage Occupations: experienced engineers#, experienced systems analysts and computer programmers#, commissioned sales persons#, highly skilled clerical workers#

Surplus Occupations: *teachers#, retail sales clerks#, construction workers#, truck drivers#, general laborers#, factory workers#*

CENTRAL MINNESOTA

Shortage Occupations: none

Surplus Occupations: *retail sales clerks#, secretaries#, welders#, machinists, factory workers: assemblers#, and finishers*

MINNEAPOLIS-ST. PAUL SMSA

Shortage Occupations: experienced engineers#, experienced systems analysts and programmers#, commissioned sales persons#, highly skilled clerical workers: stenographers and typists#

Surplus Occupations: *counselors#, cashiers#, bartenders#, general foundry worker#, production machine tenders#, electrical accessories assemblers#, production line assemblers#, construction workers#, truck drivers#, general laborers#*

NORTHEASTERN MINNESOTA

Shortage Occupations: none

Surplus Occupations: *engineers, teachers#, social workers#, drafters, office clerical workers#, sales clerks#, waiters/waitresses#, construction workers#, heavy equipment operators#, truck drivers#, mining workers#, general laborers#*

1/ Shortage occupations are those that are difficult to fill or go unfilled due to the lack of qualified applicants. Surplus occupations are those in which the number of qualified applicants greatly exceeds the number of openings.

\# This occupation has been listed as a shortage or surplus occupation in at least two out of the last three quarters of the Review.

NORTHWESTERN MINNESOTA

Shortage Occupations: commissioned sales persons

Surplus Occupations: *sales clerks#, office clerical workers#, truck drivers, construction workers#*

SOUTHERN MINNESOTA

Shortage Occupations: sales representatives#, secretaries with shorthand skills

Surplus Occupations: *elementary and secondary school teachers#, general clerical workers#, construction workers#, food preparation workers, factory workers#*

NOTE: The Experienced Supply/Job Openings Demand table, a regular item in The Job Market Section, has not been included in this issue due to new fiscal year processing delays. The information will be included in future issues.

Feature Article

DEVELOPING A MODEL FOR FORECASTING UNEMPLOYMENT INSURANCE CASH FLOWS

By R. Pinola, Charles Cline, and Al Hauwiller*

I. Introduction

In the August 1981 issue of this publication we discussed the need for and formulation of a model to project unemployment insurance (UI) cash flows.1/ At that time we pointed out that because of the difficulties in developing reliable long-range forecasts, a projections model based on the assumed behavior of key economic variables was a simpler and more practical vehicle for making reasoned cash flow policy decisions with respect to the Minnesota UI system. For this reason, we developed a model that permitted long-range estimates of tax revenues and benefit payments to be made based on different, well-defined economic scenarios.

Over the past few years, our projections model has been used in much the same way as best and worst case decision models to evaluate different policy prescriptions for effecting UI cash flows. In general, the projections model has been useful for estimating how changes in the taxable wage base, tax rates, wage loss replacement rates, and eligibility requirements impact on revenues and benefit costs under varying economic conditions. Despite its better than average record, however, it should be noted that a projections model does not lend itself to accurate short-run forecasts of cash flows unless one can reliably assign probability values to the occurrence of specific economic scenarios and the key variables in the cost and revenue equations. Rather than rely on our ability to unerringly make such probability assignments, we thought it better to directly forecast the value of key variables using established statistical methods for which probability estimates of errors of prediction and measures of confidence can be made. This article represents a progress report on this effort.

To facilitate comprehension, we first restate the revenue and cost equations for UI cash flows, noting and describing the key variables, and then proceed to discuss the methods that we employed to predict the value of these variables. We conclude our discussion with a comment on our findings and work still to be done. A terse summary considers the efficacy of the forecast model when regarded against actual experience.

II. Relevant Variables

There are relatively few variables that determine the level of unemployment benefits to be paid and revenue to be received. (See the Cash Flow article referred to above.) Benefits are equal to the average weekly benefit times the number of weekly payments. In order to make comparisons over different time periods, it is customary to convert the number of benefit payments to a rate by dividing their total amount by average covered employment. This

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* This article was prepared by R. Pinola, Charles Cline, and Al Hauwiller, Research Director and Senior Research Analysts, respectively, of the Minnesota of Department of Economic Security.

1/ See, Developing a Cash Flow Model of Minnesota's Unemployment Insurance Program by R. Pinola and John Bergland, Review of Labor and Economic Conditions, Vol. 8, No. 2, Second Quarter 1981, p. 10-16.

rate is called the compensable unemployment rate (CUR). Therefore, estimating future benefits involves estimating 1) covered employment 2) the compensable unemployment rate, and 3) the average weekly benefit amount. The last item has some peculiarities which will be left for later discussion.

In a similar manner, revenue is the product of taxable wages and the average tax rate. Taxable wages are a function of total wages paid and some formula or figure specified in the law as the ceiling on wages to be taxed. The average tax rate is primarily dependent on the minimum and maximum tax rates as provided in the law.

In mathematical terms, the relevant equations for the UI cash flow model are:

$$\text{Benefits} = \text{CUR} * \text{EMPL} * \text{AWBA}$$
$$\text{Revenue} = (\text{EMPL} * \text{AWW} * \text{TAXPROP} * \text{AVTAX}) + \text{Int.}$$

where:

EMP	=	tax rated covered employment
AWW	=	average annual wage per employee
TAXPROP	=	expected proportion of total wages that are taxable
AVTAX	=	average tax rate applicable to taxable wages
INT	=	interest earned on fund
CUR	=	compensable unemployment rate
AWBA	=	average weekly benefit amount

The behavior of the UI fund depends on the interaction of statutory and economic variables. Statutory variables are those determined by the legislature. Economic variables are those determined by the economy. Examples of statutory variables are the experience rating factors and the maximum weekly benefit allowed. Examples of economic variables are the number of employed, the unemployment rate, and the wage level.

Since the statutory variables are presumed to remain unchanged in the short-run (one year), we are only interested in forecasting the economic variables e.g. covered employment, average weekly wage, and the compensable unemployment rate. It is to these that we now turn.

III. Attempts at Forecasting Component Variables

A. Compensable Unemployment Rate

Reviewing the historical data, it will be noticed that the compensable unemployment rate (CUR) has by far the largest influence on the amount to be paid in benefits. In Minnesota it is also the most variable, ranging from under two percent in a low unemployment year to over four percent in a high unemployment year. Even worse, it seems to be the most unpredictable of the variables. Consequently, most of the effort in this project until now has been spent in trying to forecast the CUR.

We first decided to examine the relationship between the seasonally adjusted quarterly CUR and the Handbook Labor Force Unemployment Rate (UR) over the entire period for which data was available, 1966 to 1981. The simple linear fit showed evidence of strong autocorrelation (D-W=.39). This led to a considerable study of the residuals and an examination of a large number of combinations of variables, the residuals of each being calculated and plotted in order to better understand the relationships. The highest R^2 (97.7 percent) was reached with an equation that included the unemployment rate for the current period, the previous period, the second previous period, T the ith quarter in the time series, and T^2. Moreover, confidence in the specification of the equation was enhanced by a much improved measure of autocorrelation (D-W=1.62).

As an alternative, it was decided to see if the CUR forecast could be obtained more directly by regressing it on previous values of itself. Eventually a formula evolved which contained the current and four lagged quarterly values of the compensable unemployment rate and the current and four lagged quarterly values of Gross National Product.

At this point we decided to test the performance of the equation just described as a forecasting tool. This is possible by breaking the data into two periods, an initial estimating period and a test period. What is done is to make the initial estimate of the forecasting equation from the data set apart from that used for the testing period. Forecasts are then prepared based on the estimating equation and the estimating data set. We wanted to be able to estimate four quarters ahead. Thus, based on the initial data set we would have one each of the forecasts for one, two, three, and four quarters ahead.

To obtain the second set of forecasts the data set is expanded by one step, the forecasting equation reestimated, and four more forecasts prepared. At this point, we have two each of one, two, three, and four quarter-ahead forecasts. The test continues in this way until the estimating data set comprises the entire data set and no new forecasts can be prepared for comparison. At this point the analyst will have a number of one, two, three, and four quarter-ahead forecasts and since we have actual data available, the forecasting error can be computed.

It was in the testing process that we were most keenly aware of the limitations imposed by virtue of having only 64 observations. Clearly, one wants to have a sizeable number of test forecasts so that the errors thereby computed are representative, as a group, of the average forecast performance rather than being due to any unique set of circumstances. This argues for a sizeable test period. However, increasing the portion of the data to be set aside for the test period means reducing the data available for the initial estimating period and this, in turn, reduces the quality of the initial estimate. Note that to make even a minimal estimate requires one more observation than the total number of explanatory variables used in the regression model. In the tested model there are twelve explanatory variables: a constant, trend, trend-squared,

four lags of the compensable unemployment rate, and four lags of real Gross National Product. Moreover, when there are lagged values in the equation the total number of usable observations is the number of observations in the data set less the length of the longest lag. Here the longest lag is four. Thus the number of usable observations is the 64 observations in the data set less four (the longest lag), or 60. From this we subtract the number of explanatory variables, or twelve. This leaves 48 quarters to be divided between the initial estimation period and the test period. We felt that a minimum number of 16 quarterly forecasts was needed in one-quarter-ahead forecasts to establish a reasonable degree of confidence in our test results. This criterion provided us with 16 one-quarter-ahead-forecasts, 15 two-quarter-ahead-forecasts, 14 three-quarter-ahead forecasts, and 13 four-quarter-ahead-forecast of CUR. As a result only 24 observations were left for the initial estimation period.

The test forecasts were compared with the actual value of CUR over the test period and the mean absolute error calculated for the relevant quarters. Table I provides the results of our test.

Table I
Mean Absolute Error of Forecast Test

Quarters Ahead Forecasted	Mean Absolute Error	Number of Tests
1	0.32 Percentage Points	16
2	0.77 Percentage Points	15
3	1.07 Percentage Points	14
4	1.29 Percentage Points	13

When evaluating these results the reader should keep in mind that the variable being forecasted, CUR, is the compensable unemployment rate. Over the past 64 quarters this variable had a minimum value of 0.9 percent and a maximum value of 5.1 percent. For the forecast test period the low and high values were 1.6 and 4.1 percent respectively. This was accepted as a reasonable enough forecast to justify preliminary work toward incorporating the forecasted value into the cost equation.

B. Covered Employment

The variable, EMPL, appears on both sides of the cost model described on page ten. As used in the model, this variable is described as follow:

EMPL = Employment among those firms which participate in the State unemployment insurance fund on a nonreimbursable basis.

This count is not the same as total employment. For example, self employed

workers are not covered by unemployment insurance and are, therefore, not included in EMPL. Nor is EMPL the same as nonagricultural wage and salary employment. For example, employees of religious organizations and railroads are included in wage and salary employment estimates but not in EMPL. Finally, EMPL excludes some kinds of workers who are covered by the unemployment insurance program, but whose claims are not a drain on the fund. These are employees employed among reimbursable employers; such employers are billed directly on a dollar for dollar basis for the claims made against their account during the quarter. Payment is due within 30 days and interest is charged on unpaid balances. Therefore, benefits paid to such workers are not a drain on the fund. Examples of reimbursable employers are state and local government, charities, and nonprofit organizations.

All of this aside, the fact remains that EMPL is very close numerically to total nonagricultural wage and salary employment (nonagricultureal wage and salary employment is denoted by MNEMP in the following discussion for the sake of brevity). This can be seen more precisely by a simple regression to estimate the mathematical relationship between EMPL and MNEMP. When such a simple regression is run the result is:

$$\text{EMPL} = \text{CONSTANT} + B * \text{MNEMP}, \text{ or}$$
$$\text{EMPL} = -178.3050 + 0.864 * \text{MNEMP}$$

This equation explains 99 percent of the variation in EMPL. While this is a provisional relation which can probably be improved upon, it indicates the closeness in relationship between the two. Hence, if one can secure a reliable forecast of MNEMP, it can readily be translated into a good estimate of EMPL for the cash flow model.

This is important because since 1980, the Department, specifically the Research and Statistical Services Office, has had a means to forecast MNEMP.2/ The forecast is an intermediate term system, designed to produce forecasts for a time period up to eight quarters into the future. Testing of the MNEMP forecast model showed errors in the neighborhood of half of one percent, and experience with the model since that time confirms the continued reliability of estimates derived from it.

2/ This method is discussed in the article, "Forecasting Minnesota Employment, The Method of Vector Autoregression", in the May 1981 issue of the Review. An expanded discussion appears in the report, Cyclical Sensitivity In Minnesota, August 1981, by Rao Aiyagari. These publications are available upon request to R. Pinola, Director, Research and Statistical Services Office.

Tables II and III display the forecast results for the period 1981-1 (first quarter, 1981) through 1982-3. In each of the tables column one contains the calendar period and column two contains the actual revised estimate of MNEMP for each quarter as calculated on the basis of the CES-790 payroll employment survey. The remaining columns in Table II give the forecasts made anytime between one and eight quarters prior to that listed in the left hand column. For example, the actual estimate for 1982-1 MNEMP was 1710.41, or 1,710,410. Under the column headed "T + 1" is the forecast of MNEMP for 1982-1 made one quarter earlier (in 1981-4). The forecasted value was 1707.93. The forecast for 1982-1 made two quarters prior (in 1981-3) was 1712.34. Going horizontally the forecasts are made further and further ahead. The final value, 1685.88, is the forecast made eight quarters prior to 1982-1, or in 1980-1.

Table II

Total Minnesota Wage and Salary Employment
Actual and Forecasted Values

		Forecasted Values							
	Actual Data	T + 1	T + 2	T + 3	T + 4	T + 5	T + 6	T + 7	T + 8
1981-1	1732.00	1716.49	1709.70	1697.19	1717.66	1713.66	1750.74	1745.35	1759.20
1981-2	1775.03	1780.34	1742.76	1746.00	1741.01	1755.15	1756.78	1815.44	1817.65
1981-3	1711.57	1784.12	1789.65	1739.00	1753.97	1765.64	1760.14	1771.19	1849.66
1981-4	1771.90	1779.51	1784.91	1803.08	1749.30	1776.15	1787.56	1752.96	1781.38
1982-1	1710.41	1707.93	1712.34	1710.16	1748.43	1684.31	1729.22	1744.88	1685.88
1982-2	1732.33	1745.40	1741.96	1735.65	1733.07	1796.99	1716.42	1793.25	1830.83
1982-3	1708.86	1727.52	1741.82	1737.89	1722.67	1727.39	1872.99	1733.02	1838.35
1982-4		1723.84	1738.19	1744.05	1739.50	1718.50	1717.04	1833.95	1762.54
1983-1			1680.98	1687.95	1585.60	1679.83	1644.30	1635.07	1787.70
1983-2				1723.08	1733.31	1728.96	1722.88	1666.81	1659.56
1983-3					1735.39	1761.44	1743.70	1738.03	1665.39

Another way to interpret Table II is to read from the actual CES-790 estimate diagonally downward and to the right. These figures present the actual estimate for the quarter and the forecasts made at that time for the first, second, third, ..., and eighth quarter into the future. Taking 1982-1 again, 1710.41 was the actual value estimated from the survey. The values 1745.40, 1741.82, 1744.05, 1685.60, 1728.96 and 1743.70 were the forecasts for six quarters ahead (i.e; 1982-2, 1982-3, 1982-4, 1983-1, 1983-2, and 1983-4) all made in 1982-1.

Table III compares the forecasts for given time periods ahead with the actual estimate. The error as a percent of actual is presented. Continuing with our example of 1982-1, the one-quarter-ahead forecast prepared in 1981-4 was in error by -0.23 percent, or was an underestimate of less than one quarter of one percent. Similarly, the error for the two-quarter-ahead forecast of 1982-1 prepared in 1981-3 was 0.27, an overestimate slightly larger than one quarter of one percent. Finally, the eight-quarter-ahead estimate of 1982-1, prepared in 1980-1, was in error by just over 1.5 percent on the low side.

Table III
Total Minnesota Wage and Salary Employment,
Actual Values and Percent Error of Forecasted Values
1981-1 through 1982-3

	Actual Data	T + 1	T + 2	T + 3	T + 4	T + 5	T + 6	T + 7	T + 8
1981-1	1732.00	-0.895	-1.287	-2.010	-0.828	-1.059	1.082	0.771	1.57
1981-2	1775.03	0.299	-1.818	-1.636	-1.917	-1.120	-1.028	2.276	2.40
1981-3	1771.56	0.708	1.021	-1.839	-0.993	-0.334	-0.645	-0.021	4.40
1981-4	1771.90	0.429	0.734	1.760	-1.276	0.240	0.884	-1.069	0.53
1982-1	1710.41	-0.230	0.027	-0.100	2.136	1.610	1.014	1.920	-1.51
1982-2	1732.33	0.754	0.556	0.192	0.043	3.733	-0.918	3.517	5.68
1982-3	1708.88	+1.071	1.907	1.677	0.787	1.063	9.582	1.392	7.55

Briefly the method employed to produce these forecasts is based on the relationships among current and past values of three variables, MNEMP, real Gross National Product (RGNP), and the interest rate on 91-day treasury bills INTRT. Values anywhere from four to eight quarters in the past are used in the estimating equations. This means that in the process of forecasting MNEMP, RGNP and INTRT are also forecasted. Moreover, it means that the model works by providing quarter by quarter forecasts ahead into the future. If one wants a forecast for MNEMP eight quarters from now, the model first provides a forecast for one quarter ahead of MNEMP, RGNP, and INTRT. Then the model makes a forecast for two quarters ahead using, in addition to actual estimates of the three variables, the one-quarter-ahead forecasted values. As the model works its way out to the eight-quarter-ahead forecast, it produces a forecast for each intervening quarter and, uses these prior forecasts to arrive at the final one.3/

The combination of the performance of the forecasts of MNEMP and the closeness of the relationship between MNEMP and EMPL lead us to be satisfied that we have an acceptable method to forecast EMPL for use in each of the cost and revenue equations.

C. Average Weekly Wage

This factor has had only a preliminary look, but a regression using two previous values of the average weekly wage and a time variable explained 99 percent of the past variation. However, there is a problem in that the remaining variation seems to be concentrated in two particular quarters. What to do about this is now under consideration. It may be possible to improve estimates by adding a dummy variable for one quarter of the year. In any event further research needs to be done before we feel comfortable in forecasting the average weekly wage.

3/ The exact mathematical specification of the equations can be found in the two publications cited in footnote 2.

D. Average Weekly Benefit Amount

The average weekly benefit amount (AWBA) is dependent mostly on the benefit formula specified by the state law. The rate of wage replacement is specified and there are minimum and maximum weekly benefits allowed by statute. Besides these factors, there are also differences in the characteristics of the beneficiaries which affect the average benefit amount. Most of the items usually change only yearly, so they are more relevant to projections than short-term forecasts. Nevertheless, there are strong seasonal factors due to the seasonal variation in claimant characteristics that must be considered, as well as the long-range trend in the average weekly wage. Given a good forecast of the average weekly wage to measure wage drift, estimating the AWBA becomes a relatively simple task.

IV. Problems and Further Work

It was hoped that the forecasting model would be in operation in time for the 1983 legislative session. It is now apparent that the analysis of historical relationships, development of new ideas, and testing of equations takes longer than anticipated.

At the present time, very satisfactory results have been produced in forecasting EMPL through MNEMP. Real progress has been made in forecasting CUR. While satisfactory on a provisional basis, more work remains to produce an acceptable final forecasting process for this important variable.

Two important features of the problem of forecasting CUR in comparison with EMPL must be kept in mind. First, in the development of the forecasting model for MNEMP, data exists back to 1950-1. This provides us with over 120 quarterly observations. However, with respect to our unemployment variables and, in particular, CUR, data goes back only to 1966-1, providing only about half as many observations. We pointed out that this seriously restricts our ability to develop and test the forecasting equations for CUR. Second, unemployment is inherently harder to estimate and forecast than employment. This is because the amount of relative variation in the data is greater. This goes beyond saying that the difference between the smallest and largest value is larger in relative terms; it means that the month to month fluctuations are also more sizeable and more frequent.

Our search for an improved forecasting tool for CUR will continue in two directions. One will be to examine the process of forecasting CUR based on its past values and the past values of total unemployment and real Gross National Product. The second is based on recognizing that in the cost, or benefit equation, the product of multiplying EMPL by CUR is simply the level of compensable unemployment. This suggests forecasting the level rather than the rate of this unemployment variable. We expect that work in this direction will produce improved results.

Work on the average weekly wage and average weekly benefit should go more smoothly than has work on the compensable unemployment rate. Preliminary work on these variables suggests the validity of this assumption.

Once the benefit payment side of the forecast model is in hand, attention will be given to the revenue side. Some of the variables for revenue forecasting will already be available, e.g., covered employment and the average weekly wage. The others, the taxable wage and average tax rate, do not require forecasts so much as annual estimates with some adjustment for each quarter of the year.

Summary

It is axiomatic that, regardless of their form and nature, forecasting models are only as good as their ability to predict the future. Although the relative errors that apply to our regression equations for predicting the values of the key variables in our revenue and cost equations may be small, we have yet to determine how well cash flows that are based on these forecasts will track with actual experience. As we noted earlier, we still need to develop a good predictor for wage drift and to determine the applicable tax rate for the forecast period. Once these have been established, we will run quarterly simulations and test them against actual experience for past years. At this juncture in our research, we feel confident that fairly reliable four-quarter-ahead forecasts of cash flows can be made with our model. However, as with the proverbial pudding, the proof is in its consumption/use. Meanwhile experimentation will continue to see if we can improve on our ability to forecast the key variables and to determine whether structural changes in the economy will necessitate a reformulation of our model.

Brief Analysis Of Economic Conditions

THE NATIONAL AND STATE ECONOMIES IN THE THIRD QUARTER

By Ben Boyle

NATION

Except for some signs of improvement in the housing industry, the weakness in the Nation's economy continued through the third quarter and into October. Further declines in industrial production and industry employment suggest that a recovery has yet to begin. However, the drop in the discount rate to 9.0 percent in late November should lead to even lower interest rates and some increase in economic activity in the first half of 1983.

Labor market conditions deteriorated almost steadily during the third quarter and were quite bleak in October. The seasonally adjusted unemployment rate reached 10.4 percent in October, up from 10.1 percent in September and 9.5 percent in the second quarter. Total employment (seasonally adjusted) dropped sharply in October and has decreased by 670,000 since the end of the second quarter. Also, seasonally adjusted nonfarm payroll employment declined substantially in October and was 914,000 below the level of June. Over half of the drop in payroll jobs since June was in the cyclically sensitive durable goods manufacturing industries.

Other economic indicators also showed a weak economy in the third quarter and October. The latest revision revealed that real gross national product did not grow during the third quarter. Also, industrial production and factory utilization as a percent of capacity continued to fall through October. Some good news in October, however, was that there were large rises in building permits for private housing in September and October. These increases in permits should be followed by a higher level of housing starts in the coming months.

STATE

The Minnesota economy also continued to be quite sluggish during the third quarter and into October. Both the number of unemployed and the unemployment rate remained very high in the summer quarter and then rose further in October. However, the declines in seasonally adjusted nonagricultural wage and salary employment slowed noticeably in September and October.

After averaging 7.3 percent in the third quarter, the third highest quarterly rate since labor force rates were first computed in 1970, the State's seasonally unadjusted unemployment rate climbed to 7.6 percent in October. The 0.4 of a percentage point rise in the rate in October was steeper than normal. However, this may be an aberration because the UI claim load actually fell in October. Total employment, also unadjusted, appeared to be showing more strength in August and September as the over-the-year declines were less than in previous months. In October, however, the drop from a year earlier again was quite large. On the other hand, seasonally adjusted nonfarm wage and salary employment fell only 1,600 between August and October after average monthly declines of 6,700 between October 1981 and August 1982.

Other economic data for the third quarter and October also suggested that the State's economy was still very weak. Both housing permits and retail sales were little changed in the third quarter from the second quarter and were not significantly above the third quarter of 1981. Also, seasonally adjusted average weekly initial claims for unemployment benefits were higher than the averages of the second and third quarters in September and October.

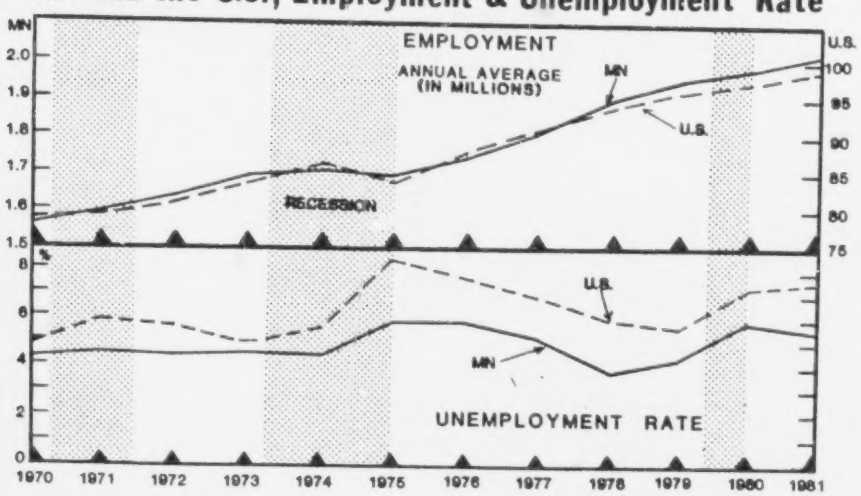
Labor Force Statistics

Labor Force Estimates	MINNESOTA (Numbers in '000's)			UNITED STATES (Numbers in '000,000's)		
	October 1982	Change From Last Mo.	Change From Year Ago	October 1982	Change From Last Mo.	Change From Year Ago
Civilian Labor Force	2166.7	-6.1	9.3	110.7	0.2	1.5
Employed	2001.2	-15.9	-54.1	99.8	-0.1	-1.2
Unemployed	165.5	9.8	63.4	10.9	0.3	2.7
Unemployment Rate						
Actual	7.6	0.4	2.9	9.9	0.2	2.4
Seasonally Adjusted	n.a	n.a	n.a	10.4	0.3	2.4

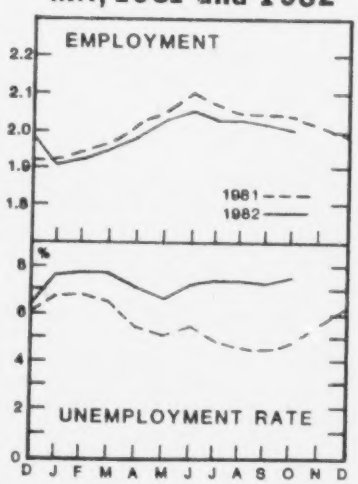
Historical Labor Force Series

Year	Minnesota (Annual Average in '000's)				United States (Annual Average in '000,000's)			
	Labor Force	Employment	Unemployment Number	Unemployment Rate	Labor Force	Employment	Unemployment Number	Unemployment Rate
1970	1625.0	1557.0	68.0	4.2	82.8	78.7	4.1	4.9
1971	1665.0	1593.0	73.0	4.4	84.4	79.4	5.0	5.9
1972	1709.0	1635.0	73.0	4.3	87.0	82.2	4.9	5.6
1973	1774.0	1694.0	80.0	4.5	89.4	85.1	4.4	4.9
1974	1779.0	1701.0	77.0	4.3	91.9	86.8	5.2	5.6
1975	1804.0	1697.0	107.0	5.9	93.8	85.8	7.9	8.5
1976	1849.0	1739.0	109.0	5.9	96.2	88.8	7.4	7.7
1977	1907.0	1809.0	97.0	5.1	99.0	92.0	7.0	7.1
1978	1979.0	1903.0	75.0	3.8	102.3	96.0	6.2	6.1
1979	2038.0	1953.0	85.0	4.2	105.0	98.8	6.1	5.8
1980	2108.0	1982.0	125.0	5.9	106.9	99.3	7.6	7.1
1981	2143.0	2024.0	118.0	5.5	108.7	100.4	8.3	7.6

MN and the U.S., Employment & Unemployment Rate



MN, 1981 and 1982



Labor Market Conditions

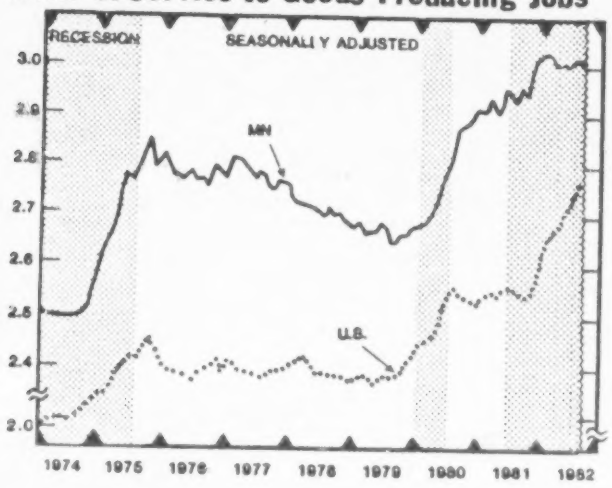
The table and graphs in this section describe the behavior of the market for labor services in terms of its quantity, price, and supply. The quantity of labor services, which is the number of employed persons, is classified by industry. The price of labor services is roughly indicated by the industry wage. Unemployment estimates provide a qualified measure of excess labor supply. The degree to which persons participate in the labor market and the effectiveness of the market in utilizing labor services are indicated by Labor Force Estimates and by Other Rates of Labor Utilization.

Labor Force And Establishment Data	MINNESOTA (Numbers in '000's)			UNITED STATES (Numbers in '000's)		
	III Qtr 1982	Percent Change From		III Qtr 1982	Percent Change From	
		Last Qtr	Year Ago		Last Qtr	Year Ago
LABOR FORCE ESTIMATES						
Total Labor Force	2178.3	0.4	0.4	111653	1.4	1.8
Employment	2019.7	0.1	-2.4	100839	1.0	-0.9
Nonagricultural	n.a	n.a	n.a	96989	0.7	-1.0
Agricultural	n.a	n.a	n.a	3850	9.2	1.7
Unemployment	158.6	5.0	58.0	10814	5.3	35.4
By Reason - New Reentrants-%*	n.a	n.a	n.a	33.9	0.9	-9.4
By Reason - Quit-%*	n.a	n.a	n.a	7.2	-14.3	-36.3
By Reason - Lost-%*	n.a	n.a	n.a	58.9	1.6	14.8
Unemployment Rates						
Actual	7.3	4.3	58.7	9.7	4.3	32.9
Seasonally Adjusted	n.a	n.a	n.a	9.9	4.2	33.8
OTHER RATES OF LABOR UTILIZATION						
Participation Rt (Labor Force/Population 16+)	n.a	n.a	n.a	64.2	0.3	0.6
Full Employment Deficit - Percent of Workers1/	3.3	3.0[a]	0.6[a]	5.7	5.3[a]	3.3[a]
Manpower Utilization Rate2/	80.2	-1.7	-3.4	79.6	-0.7	-3.8
NONAGRICULTURAL WAGE AND SALARIED POSITIONS						
Employment*	1698.6	-1.4	-3.5	89280	-0.8	-2.3
Mining	6.1	-47.4	-61.4	1087	-5.7	-7.8
Construction	62.2	-2.2	-6.5	3904	-1.3	-5.9
Manufacturing	344.4	-1.1	-5.1	18684	-2.0	-8.0
Durables	205.4	-1.8	-6.1	11007	-2.6	-10.0
Nondurables	139.0	-0.2	-3.7	7677	-1.2	-5.1
Trans., Comm., & Public Utilities	92.7	-0.7	-6.2	5030	-1.2	-2.7
Trade	428.3	-0.7	-3.0	20549	-0.3	-0.5
Fin., Ins., & Real Estate	97.5	-0.5	0.2	5362	0.4	0.8
Services	390.2	0.9	2.0	19046	0.5	2.1
Government	277.2	-4.6	-5.9	15618	-1.4	-1.9
Average Weekly Hours*						
Mining	37.8	1.1	-3.3	42.2	-1.2	-3.9
Construction	36.5	-1.1	2.5	37.5	0.8	1.4
Manufacturing	38.9	-1.3	-1.3	38.9	-0.5	-2.3
Durables	39.6	-1.5	-1.0	39.3	-0.8	-2.2
Nondurables	38.1	-0.5	-1.0	38.5	0.0	-1.5
Trans., Comm., & Public Utilities	38.0	-1.8	-1.3	39.2	0.8	-0.8
Trade	29.3	-0.3	-2.3	32.0	0.3	-0.6
Fin., Ins., & Real Estate	n.a	n.a	n.a	36.1	-0.3	-0.3
Services	n.a	n.a	n.a	32.7	0.0	0.6
Average Hourly Wage						
Mining	12.50	-5.9	-3.6	10.94	2.1	7.7
Construction	14.31	0.6	8.9	11.62	1.9	6.4
Manufacturing	9.11	0.6	8.5	8.55	1.1	5.9
Durables	9.21	2.3	9.1	9.12	1.3	5.8
Nondurables	8.98	-1.8	7.7	7.78	1.4	7.0
Trans., Comm., & Public Utilities	10.38	1.5	5.7	10.39	2.2	5.7
Trade	6.92	1.9	6.1	6.22	0.5	4.4
Fin., Ins., & Real Estate	n.a	n.a	n.a	6.85	2.1	7.9
Services	n.a	n.a	n.a	6.91	1.2	7.6
Estimates of Labor Turnover (Mfg. Only)	Estimates of Labor Turnover have been discontinued as of January 1, 1982.					

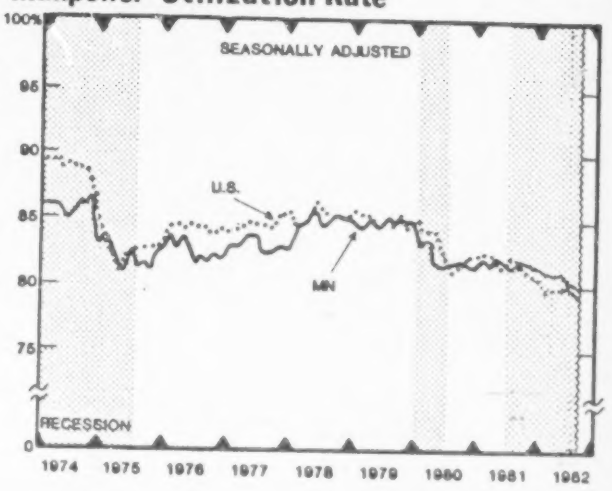
a/ Values are numerical values, not percent changes.

Labor Market Conditions

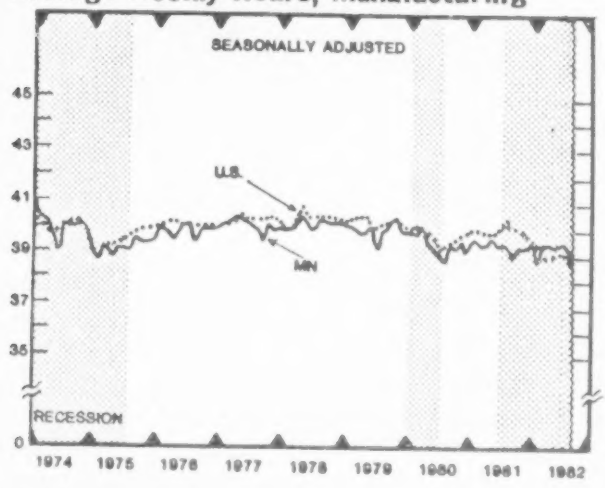
Ratio of Service to Goods Producing Jobs



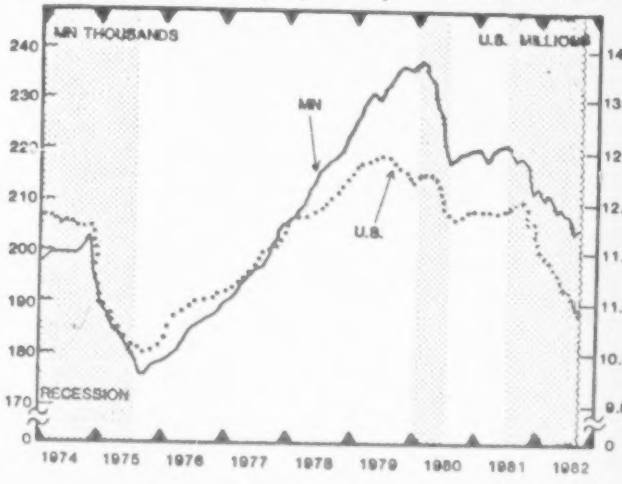
Manpower Utilization Rate



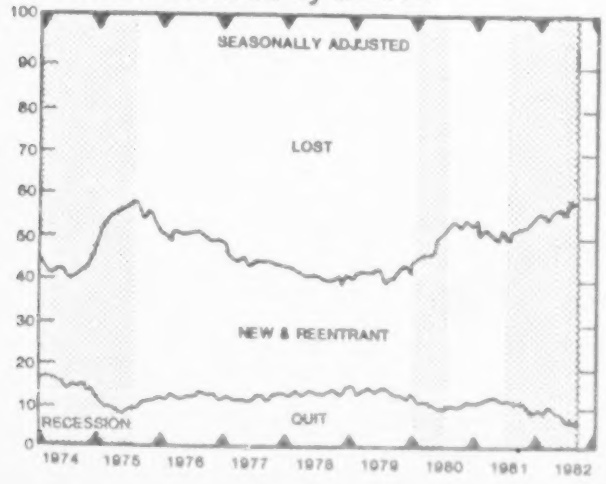
Average Weekly Hours, Manufacturing



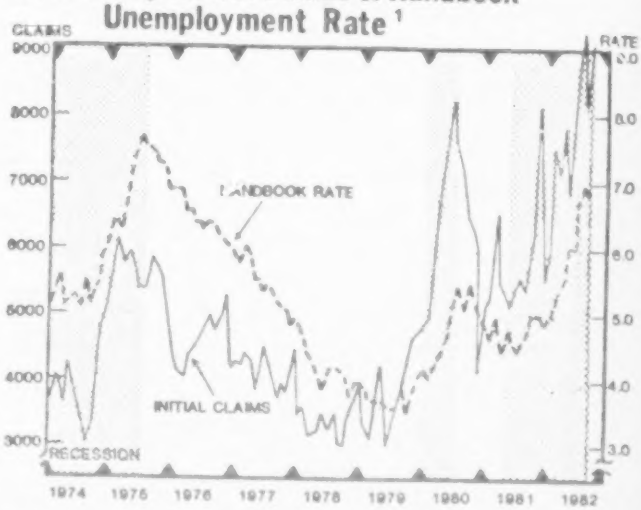
Manufacturing Employment, Durable Goods



U.S. Unemployment: Percent Distribution by Reason



MN Weekly Initial Claims & Handbook Unemployment Rate [1]



Labor Market Conditions

The Table below provides data on persons who file claims for unemployment compensation in Minnesota. Only those claiming benefits from the regular State program are represented, since data on the characteristics of Federal employees and veterans are not available, and data on those receiving benefits from extended programs is reported only when those programs are in effect. If those receiving extended benefits were included they would distort the numerical comparisons over time, but would not substantially change the percentage distributions other than to increase the proportion of long-term unemployed.

Persons Claiming Benefits	Third Quarter 1982			October 1982			Percent Long Term
	Number	Percent Change From		Number	Percent Change From		
		Last Qtr.	Year Ago		Month Ago	Year Ago	
By Age & Sex							
Male	40018	-9.8	95.8	37141	0.7	80.4	33.6
Under 45	31383	-12.0	90.9	28804	0.4	70.9	32.8
Under 25	8032	-30.0	46.9	7342	3.9	24.2	24.3
25-34	15791	-6.0	107.9	14385	-0.6	86.0	35.6
35-44	7560	2.0	123.7	7077	-1.0	120.5	36.1
45 and Over	8635	-0.6	115.9	8337	1.8	123.4	36.3
45-54	4860	-1.3	123.6	4764	3.0	136.1	35.3
55 and Over	3775	0.4	106.7	3573	0.4	108.5	37.7
Female	20520	7.7	71.2	17193	-0.7	48.0	35.0
Under 45	15540	7.3	72.8	13143	-0.9	50.5	34.0
Under 25	4049	-7.5	53.4	3569	1.7	39.0	26.3
25-34	6921	11.1	74.7	5861	-1.1	56.6	36.7
35-44	4570	17.9	90.8	3713	-3.2	53.2	37.2
45 and Over	4980	8.7	66.3	4050	-0.1	40.7	38.0
45-54	2898	10.6	.7	2357	-0.1	37.8	35.8
55 and Over	2082	6.2	73.2	1693	0.0	44.9	41.1
By Industry	60538	-4.5	86.7	54334	0.3	68.7	34.0
Ag., For., Fish.	479	-38.5	44.3	556	21.7	49.1	13.7
Mining	7913	109.2	3416.9	6775	-7.5	284.1	64.6
Construction	5985	-52.2	19.9	5897	5.0	48.9	17.0
Manufacturing	19633	-7.2	102.0	17892	0.6	84.3	30.6
Pub. Utilities	2394	-26.0	60.1	1911	3.0	38.8	29.0
Wholesale Trade	3783	-5.3	61.4	3637	1.0	90.9	30.5
Retail Trade	5983	-9.0	39.1	5620	2.5	44.8	29.3
Fin., Ins., Real Est.	1330	-4.0	61.4	1236	-1.6	38.9	35.6
Services	11750	35.4	65.2	9359	-3.1	34.0	38.3
Public Admin.	788	-18.6	-5.9	933	28.0	-19.1	22.8
Inf. Not Available	500	45.3	98.4	518	24.2	152.7	4.4
By Occupation	60538	-4.5	86.7	54334	0.3	68.7	34.0
Prof., Tech., Mgr.	9868	-43.1	84.6	8173	-4.2	70.8	42.3
Clerical	6812	12.0	57.3	6341	-0.3	42.3	33.0
Sales	2096	-1.8	48.8	1925	-2.8	48.5	33.0
Services	4139	3.2	54.6	3767	3.1	26.9	29.7
Farm., For., Fish.	322	-50.5	27.8	430	33.1	25.4	13.0
Processing	2761	-26.2	132.4	2189	-3.3	202.3	46.2
Machine Trade	5011	3.2	109.4	4802	0.4	97.3	30.2
Benchwork	6949	-1.7	103.2	6361	2.4	73.1	28.3
Structural Work	8740	-43.5	31.1	8532	6.6	51.8	19.6
Misc.	13656	10.7	195.5	11631	-2.4	101.4	44.2
Inf. Not Available	184	6.4	46.0	183	6.4	47.6	33.9
By Duration	60538	-4.5	86.7	54334	0.3	68.7	
0-14 Weeks	45777	1.0	84.3	35840	-5.2	38.4	
15+ Weeks (Long-Term)	14761	-18.3	94.4	18494	12.8	193.2	

Labor Market Conditions

Minnesota Nonagricultural Wage & Salary Employment, Hours, and Earnings

INDUSTRY	EMPLOYMENT[1] (thousands)			PER CENT CHANGE FROM		PRODUCTION WORKERS' HOURS & EARNINGS					
						Average Weekly Earnings		Average Hourly Earnings		Average Weekly Hours	
	Oct. 1982	Sept. 1982	Oct. 1981	Sept. 1982	Oct. 1981	Oct. 1982	Sept. 1982	Oct. 1982	Sept. 1982	Oct. 1982	Sept. 1982
TOTAL NONAGRICULTURAL	1712.1	1714.9	1782.6	-0.2	-4.0						
MANUFACTURING	344.8	352.5	366.4	-2.2	-5.9	358.80	353.47	9.20	9.11	39.0	38.8
Durable Goods	203.4	205.9	218.7	-1.2	-7.0	367.35	364.98	9.30	9.24	39.5	39.5
Furniture, Lumber and Wood	13.9	14.6	15.0	-4.5	-7.1	370.74	374.23	9.68	9.67	38.3	38.7
Stone, Clay and Glass	8.0	8.4	9.1	-4.7	-12.1	359.33	356.96	9.12	9.06	39.4	39.4
Primary Metals	5.5	5.8	6.5	-4.1	-14.4	330.75	321.03	8.75	8.70	37.8	36.9
Fabricated Metals	32.7	32.8	33.6	-0.4	-2.8	436.07	419.52	10.61	10.41	41.1	40.3
Nonelectrical Machinery	79.7	81.0	85.9	-1.5	-7.2	367.70	369.72	9.38	9.36	39.2	39.5
Electrical Machinery	26.0	25.7	26.9	1.0	-3.6	314.70	316.32	8.09	8.09	38.9	39.1
Transportation Equipment	6.0	6.0	6.5	0.1	-7.8	385.31	380.72	9.73	9.59	39.6	39.7
Other Durable Goods [2]	31.6	31.7	35.2	-0.2	-10.1	339.49	337.85	8.53	8.51	39.8	39.7
Nondurable Goods	141.3	146.6	147.7	-3.6	-4.3	347.00	340.61	9.06	8.94	38.3	38.1
Food and Kindred	49.1	53.9	51.4	-8.8	-4.4	319.17	304.87	8.29	7.96	38.5	38.3
Textile and Apparel	5.6	5.7	7.5	-2.0	-25.0	212.18	205.28	5.96	6.02	35.6	34.1
Paper and Allied	31.0	31.4	32.0	-1.4	-3.1	420.85	420.85	10.19	10.19	41.3	41.3
Printing and Publishing	34.9	34.8	34.6	0.4	0.8	361.58	364.03	10.10	10.14	35.8	35.9
Chemical and Petroleum	9.1	9.1	9.5	-0.3	-3.9	393.03	392.00	9.90	10.00	39.7	39.2
Rubber and Leather	11.6	11.7	12.7	-1.0	-9.3	282.92	278.10	7.73	7.79	36.6	35.7
NONMANUFACTURING	1367.4	1362.4	1416.2	0.4	-3.5						
Mining and Quarrying	6.7	6.4	16.2	3.9	-58.6	502.65	503.93	12.79	12.79	39.3	39.4
Metal Mining	4.6	4.3	14.1	6.6	-67.2	529.98	563.33	14.56	14.67	36.4	38.4
Construction	69.8	71.2	76.3	-2.0	-8.5	533.74	513.72	14.12	14.39	37.8	35.7
Building	19.8	20.2	21.6	-2.1	-8.2	499.90	479.50	12.72	13.03	39.3	36.8
Highway and Heavy	13.6	14.4	14.9	-5.6	-8.3	472.82	447.60	11.85	12.68	39.9	35.3
Special Trades	36.4	36.6	39.8	-0.5	-8.6	574.86	558.27	15.88	15.86	36.2	35.2
Transportation	60.7	60.2	64.5	0.8	-5.9						
Railroads	12.5	12.7	15.3	-1.6	-18.3	456.86	456.86	10.13	10.13	45.1	45.1
Trucking and Warehousing	23.6	23.4	24.3	0.9	-2.6	430.92	428.13	11.97	11.54	36.0	37.1
Public Utilities	32.8	33.5	34.5	-2.0	-4.9	468.47	466.88	11.86	11.79	39.5	39.6
Communications	19.0	19.3	20.0	-1.6	-5.0	437.63	438.36	11.25	11.24	38.9	39.0
Elec., Gas and Sanitary	13.9	14.2	14.6	-2.5	-4.8	503.26	500.12	12.55	12.41	40.1	40.3
Trade	425.8	432.8	442.4	-1.6	-3.8	207.01	207.90	6.97	7.00	29.7	29.7
Retail	314.8	319.8	324.2	-1.6	-2.9	164.07	163.68	6.01	6.04	27.3	27.1
General Merchandise	44.9	43.4	48.0	3.4	-6.5	159.33	165.86	5.63	5.68	28.3	29.2
Food Stores	44.2	45.9	45.7	-3.6	-3.2	210.73	210.09	7.42	7.45	28.4	28.2
Automotive	33.4	34.0	34.4	-1.5	-2.7	236.94	237.00	7.18	7.16	33.0	33.1
Eating and Drinking	105.0	108.9	107.3	-3.5	-2.1	86.05	84.05	4.04	4.10	21.3	20.5
Wholesale	111.0	113.0	118.3	-1.8	-6.2	354.71	356.74	9.31	9.29	38.1	38.4
F.I.R.E.	97.0	98.1	98.1	-1.1	-1.1						
Finance	46.0	46.6	45.8	-1.1	0.5						
Insurance	35.3	35.3	35.5	-0.3	-0.8						
Real Estate	15.7	16.2	16.8	-2.7	-6.2						
Service Industries	392.3	393.0	388.5	-0.2	1.0						
Hotel and Lodging	19.9	21.4	21.4	-7.1	-7.0						
Business Services	59.5	58.5	59.3	1.8	0.3						
Health Services	133.5	134.0	131.3	-0.4	1.7						
Private Education	25.0	22.0	23.5	13.6	6.3						
Soc. Serv., Museums etc.	85.2	85.2	83.8	0	1.8						
Government	282.2	267.2	295.7	5.6	-4.6						
Federal	30.4	30.6	30.9	-0.8	-1.6						
State	71.3	64.1	73.9	11.3	-3.5						
Local	180.5	172.5	191.0	4.7	-5.5						

[1] Totals may not add because of rounding.
[2] Includes Scientific Instruments and Miscellaneous Industries.

Labor Market Conditions

Labor Force Data: State, SMSAs, and Counties

Area or County	October, 1982 Prelim.		
	Labor Force[1]	Unemp.	Un. Rate
State of Minnesota	2166696	165488	7.6
Metropolitan Areas			
Duluth/Superior (Duluth City Only)	36088	3909	10.8
Fargo/Moorhead (Clay County, MN Only)	28203	1587	5.6
Minneapolis/St. Paul SMSA[2]	1169027	79013	6.8
Rochester SMSA (Olmsted Co.)	58697	3502	6.0
St. Cloud SMSA[3]	77176	6572	8.5
Counties			
Aitkin	5221	631	12.1
Anoka	110565	7376	6.7
Becker	12601	1154	9.2
Beltrami	16186	1347	8.3
Benton	11980	1087	9.1
Big Stone	4031	250	6.2
Blue Earth	29310	1707	5.8
Brown	15592	973	6.2
Carlton	11857	1250	10.5
Carver	20771	1267	6.1
Cass	10260	923	9.0
Chippewa	7332	530	7.2
Chisago	14532	993	6.8
Clay	28203	1587	5.6
Clearwater	3887	497	12.8
Cook	2269	213	9.4
Cottonwood	7350	333	4.5
Crow Wing	16979	1538	9.1
Dakota	109420	7225	6.6
Dodge	8483	635	7.5
Douglas	13450	974	7.2
Faribault	10893	637	5.8
Fillmore	12176	698	5.7
Freeborn	18112	1183	6.5
Goodhue	19571	1269	6.5
Grant	3396	134	3.9
Hennepin	531889	36256	6.8
Houston	10125	426	4.2
Hubbard	5680	539	9.5
Isanti	10285	951	9.2
Itasca	17371	3055	17.6
Jackson	7960	286	3.6
Kanabec	5783	559	9.7
Kandiyohi	18508	1062	5.7
Kittson	3390	166	4.9
Koochiching	7864	903	11.5
Lac qui Parle	5841	310	5.3
Lake	4930	1767	35.8
Lake of the Woods	1830	131	7.2
Le Sueur	12531	1193	9.5
Lincoln	3025	155	4.1
Lyon	14963	759	5.1
McLeod	17123	1065	6.2
Mahnomen	2766	248	9.0
Marshall	6495	551	8.5
Martin	14414	879	6.1
Meeker	11261	740	6.6
Mille Lacs	9061	867	9.6
Morrison	13234	1550	11.7
Mower	17976	1176	6.5
Murray	6062	253	4.2
Nicollet	15096	887	5.9
Nobles	12277	571	4.7
Norman	4694	183	3.9
Olmsted	58697	3502	6.0
Otter Tail	24176	1541	6.4
Pennington	6429	488	7.6
Pine	9675	946	9.8
Pipestone	5633	272	4.8
Polk	15670	917	5.9
Pope	5667	396	7.0
Ramsey	260191	18124	7.0
Red Lake	2248	258	11.5
Redwood	11002	628	5.7
Renville	12279	635	5.2
Rice	23119	1763	7.6
Rock	5739	226	3.9
Roseau	5456	619	11.3
St. Louis (Inc. Duluth)	97169	20120	20.7
Scott	25011	1960	7.8
Sherburne	14358	1424	9.9
Sibley	8549	580	6.8
Stearns	50838	4061	8.0
Steele	16199	1046	6.5
Stevens	5879	241	4.1
Swift	6305	405	6.4
Todd	11888	853	7.2
Traverse	2807	104	3.7
Wabasha	9997	800	8.0
Wadena	6517	527	8.1
Waseca	9029	554	6.1
Washington	63509	3716	5.9
Watonwan	6633	374	5.6
Wilkin	4329	238	5.5
Winona	22791	1715	7.5
Wright	33139	2096	6.3
Yellow Medicine	8057	460	5.7

Technical Notes:

1/ Labor force data is computed according to BLS methodology. The method includes an adjustment to assure that the sum of the substate areas equals the separately estimated State total. This adjustment is Applied to all county and SMSA areas. County and area unemployment was multiplied by an adjustment factor of 1.46, employment was multiplied by 1.02. For a more detailed explanation see the Review of Labor and Economic Conditions, Vol. 4, No. 4, (February 1978 issue), p. 29.

2/ Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Scott, Washington, and Wright Counties.

3/ Benton, Sherburne, and Stearns Counties.

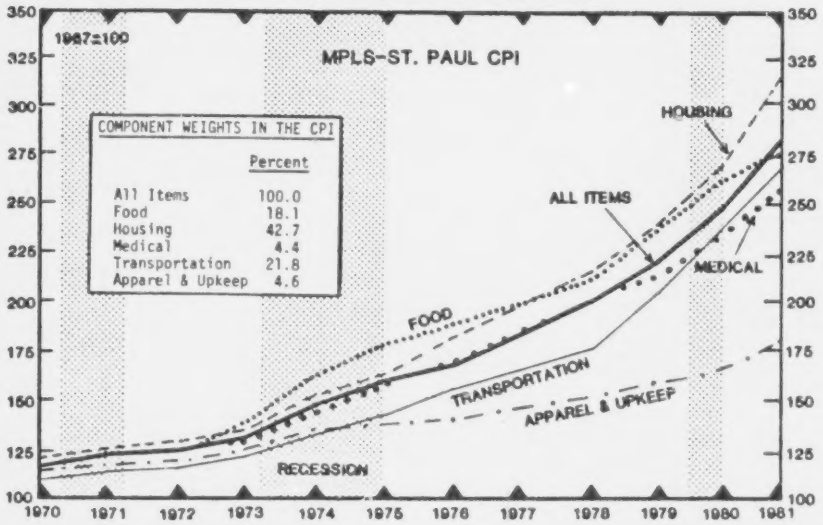
Income & Purchasing Power

This section describes how Minnesotans fare with respect to their ability to acquire goods and services needed to meet their needs and wants and how they compare with others in the United States in this respect. Real Per Capita Personal Income measures money income received by all individuals from wages and salaries, dividends, rent, professional and farm income, personal interest payments, and transfer payments, less personal contributions for social security, all adjusted for the price level as indicated by the CPI and for population. The Consumer Price Index (CPI) measures changes in the price of a representative combination of goods and services consumed by urban wage and salary workers relative to 1967. The inverse of the CPI (1/CPI) indicates the value of the dollar; when the CPI increases the value of the dollar falls. The change in the CPI over any period of time divided by the value at the beginning of the period gives the percentage change, or the rate of inflation.

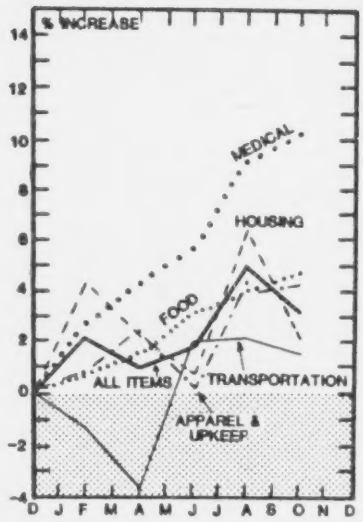
Income And Purchasing Power	MINNESOTA			UNITED STATES		
	III Qtr 1982	Percent Change from		III Qtr 1982	Percent Change from	
		Last Qtr.	Year Ago		Last Qtr.	Year Ago
INCOME STATISTICS						
Personal Income 1/*						
Total Personal Income (in Billions)	48.1	0.4	6.2	2597.8	1.8	5.7
Due to Labor 2/	n.a	n.a	n.a	1725.0	35.3	50.5
Due to Property 3/	n.a	n.a	n.a	604.6	33.3	28.3
Due to Transfer Payments 4/	n.a	n.a	n.a	300.7	34.4	25.7
Total Disposable Personal Income	n.a	n.a	n.a	2202.3	2.4	6.9
As Percent of Total Pers. Inc.	n.a	n.a	n.a	84.8	0.6	1.2
Per Capita Personal Income 5/						
Current dollar Value	11641	0.2	5.5	11187	1.5	4.7
Real (1967) Dollar Value	3746	-2.5	-2.9	3827	-0.4	-0.9
Real Median Family Money Income 5/*						
All Families	8668	-2.4	-3.4	8548	-0.6	-1.2
Four Person Families	8988	-2.3	-3.6	9966	-0.5	-1.1
Earnings of Production Workers in Mfg. 6/						
Average Weekly Earnings	353.90	-0.3	7.2	332.59	0.8	3.9
Real Average Weekly Earnings 7/	113.87	-3.0	-1.3	113.78	-1.1	-1.6
Income Related Criteria 8/						
Standard Budgets						
Low	15118	—	7.8	15323	—	9.1
Moderate	25799	—	9.2	25407	—	9.8
High	38698	—	9.7	38060	—	10.6
Poverty Level Income						
Urban Family of Four	9300	—	10.1	9300	—	10.1
Nonurban Family of Four	7910	—	10.0	7910	—	10.0
MEASURES OF PRICE CHANGE AND INFLATION						
Consumer Price Level (CPI) 9/	310.8	2.7	8.7	292.3	1.9	5.6
Food	289.5	1.6	3.7	287.9	0.7	3.7
Housing	373.4	3.3	13.0	319.9	2.0	6.6
Transportation	283.4	2.9	4.4	297.6	3.1	4.3
Medical	295.2	3.7	12.1	331.1	2.7	11.0
Purchasing Power of the Dollar (1/CPI)	.32	-2.7	-8.0	.34	-2.0	5.3
Wholesale Price Index	n.a	n.a	n.a	300.2	0.5	1.4
Industrial Commodities	n.a	n.a	n.a	313.1	1.0	2.0

Income & Purchasing Power

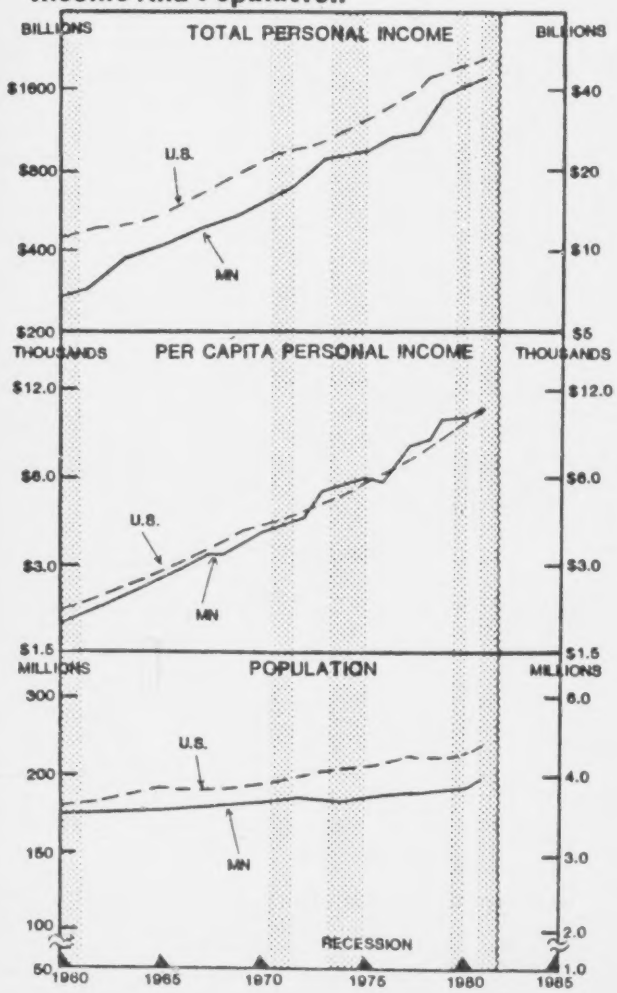
Consumer Price Index- Major Components



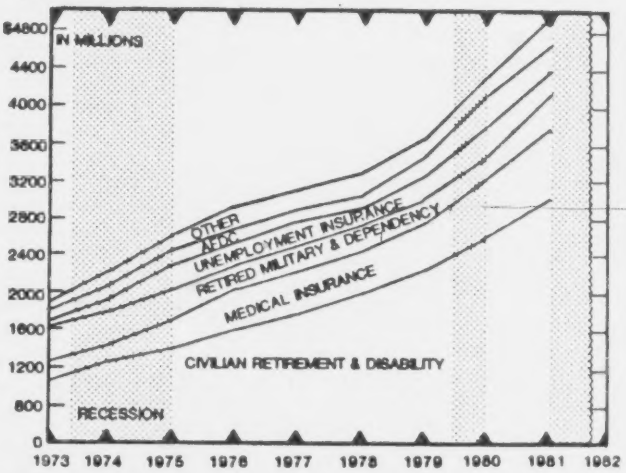
% △ From Dec. 1981



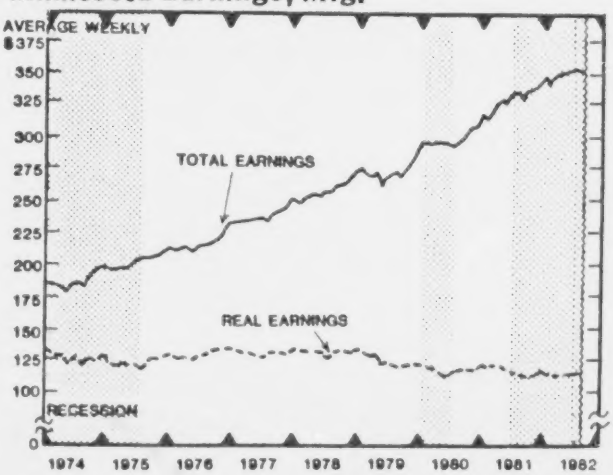
U.S. & MN Personal Income And Population



Government Transfer Payments To Individuals In Minnesota



Minnesota Earnings, Mfg.



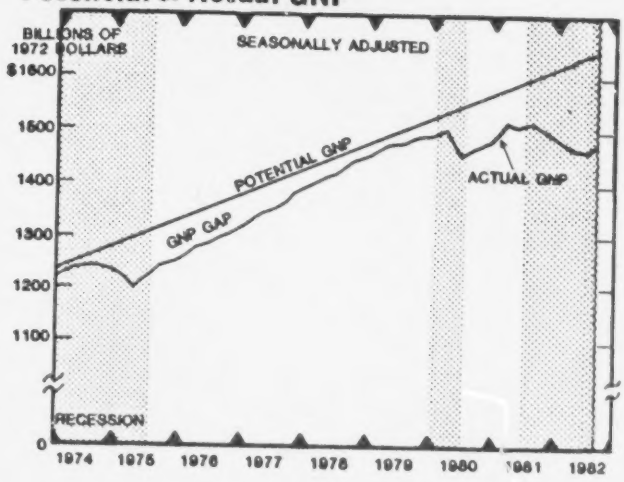
Output, Expenditures, Money, & Credit Conditions

The overall level and composition of National Output shape labor market conditions, and nominal and real earnings. (Nominal values are not adjusted for inflation; real values are adjusted for inflation.) Personal Consumption Expenditures, especially on Durable Goods, together with data on Retail Sales, are frequently used as indicators of future levels of employment. The number of Building Permits influences the level of employment in construction and related industries. The Federal Budget Deficit is a key indicator of the stimulatory effect of government policy. Whether this effect results in inflation, improved employment conditions, or some combination of the two, depends in part, upon the degree to which present productive capacity is utilized. Present and anticipated Money and Credit Conditions determine the ability of consumers, business, and State and Local governments to borrow in order to finance purchases, which, in turn, generate income and employment. Unfortunately, most data of this kind is available only for the Nation. However, in an economy as interdependent as ours, analysis of the directions of change of key national indicators is a useful tool for understanding the course of the State economy.

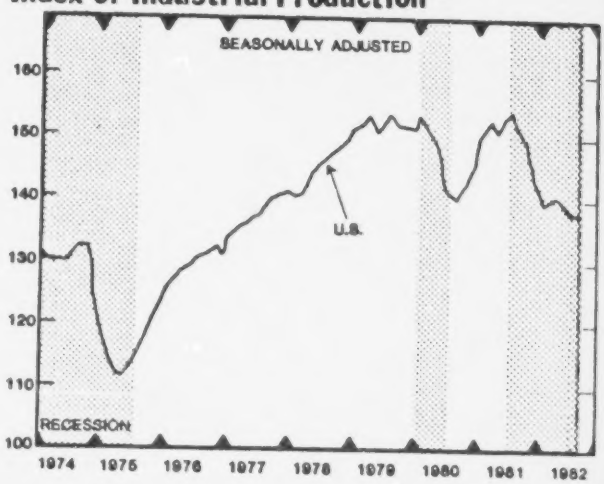
Output, Expenditure, Money, And Credit Conditions	MINNESOTA			UNITED STATES		
	III Qtr. 1982	Percent Change from		III Qtr 1982	Percent Change from	
		Last Qtr.	Year Ago		Last Qtr.	Year Ago
OUTPUT AND EXPENDITURE						
Retail Sales (in millions of dollars)	1643	0.2	3.2	89163	0.1	1.7
Private Housing Units Authorized by Building Permits 1/	16524	-0.1	3.7	996	8.6	12.5
Index of Industrial Production 2/	n.a	n.a	n.a	138.1	-0.9	-9.7
Gross National Product (in billions of 1972 dollars)* 3/	n.a	n.a	n.a	1481.2	0.2	-1.9
Personal Consumption Expenditures	n.a	n.a	n.a	958.4	0.4	0.7
Durable Goods	n.a	n.a	n.a	136.8	-1.1	-3.8
As Percent of Pers. Cons.	n.a	n.a	n.a	14.3	-1.4	-4.0
Nondurable Goods	n.a	n.a	n.a	366.9	0.7	1.1
Services	n.a	n.a	n.a	454.6	0.5	1.8
Gross Private Domestic Investment	n.a	n.a	n.a	202.1	-0.1	-13.4
As Percent of GNP	n.a	n.a	n.a	13.6	-0.7	-12.3
Nonresidential, Fixed	n.a	n.a	n.a	161.0	-3.4	-7.4
Residential	n.a	n.a	n.a	40.5	1.0	-5.6
Net Exports	n.a	n.a	n.a	30.7	-14.0	-21.7
Government Purchases	n.a	n.a	n.a	290.0	1.6	1.3
Federal	n.a	n.a	n.a	115.3	4.5	4.2
State and Local	n.a	n.a	n.a	174.7	-0.2	-0.6
GNP Gap (Full Empl. Minus Present GNP)						
1972 Dollars (in billions)	n.a	n.a	n.a	165.4	6.0	86.7
Current Dollars (in billions)	n.a	n.a	n.a	345.2	7.4	97.4
Current Federal Budget Deficit 4/						
As Percent of GNP	n.a	n.a	n.a	-5.0	-3.9	-2.0
Inventory to Sales: Durable Goods in Mfg.	n.a	n.a	n.a	2.37	0.4	8.7
New Orders to Shipments: Durable Goods	n.a	n.a	n.a	.96	-0.4	-4.6
Plant Capacity Utilization Rate in Mfg. 5/	n.a	n.a	n.a	69.6	-1.0	-12.2
MONEY AND CREDIT CONDITIONS						
Interest Rates						
Discount Rate	10.83	-9.8	-22.6	10.83	-9.8	-22.6
Prime Rate	n.a	n.a	n.a	14.72	-10.8	27.6
Rate on Conventional Mortgages	14.31	0.0	-1.4	15.49	-2.5	0.5
Federal Funds Rate	n.a	n.a	n.a	11.01	-24.2	-37.4
Consumer Installment Credit Outstanding	n.a	n.a	n.a	334076	1.3	3.0
As Percent of Disposable Personal Income	n.a	n.a	n.a	15.2	-1.1	-3.7

Output, Expenditures, Money, & Credit Conditions

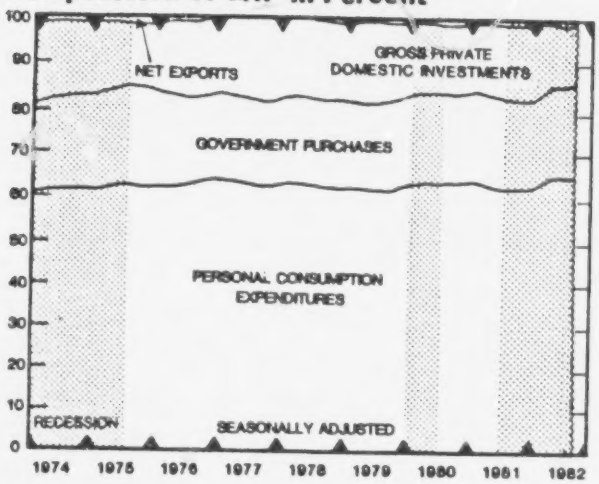
Potential & Actual GNP



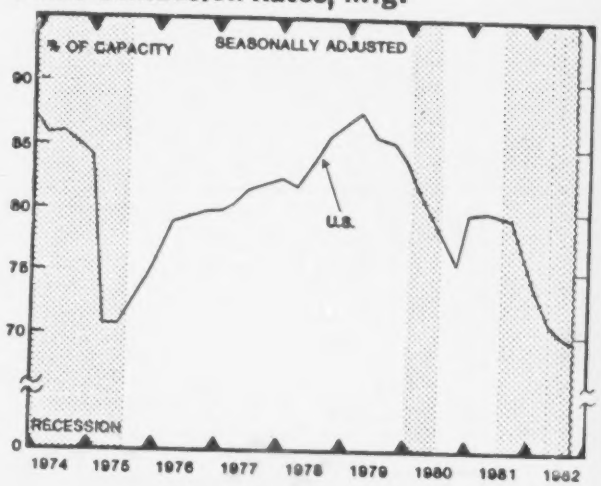
Index of Industrial Production [1]



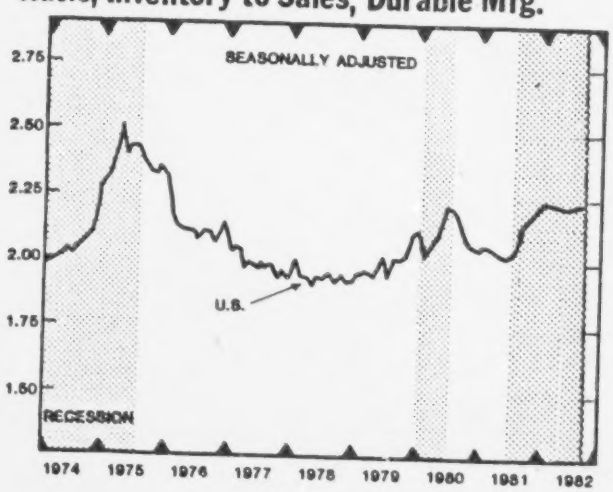
Composition of GNP in Percent



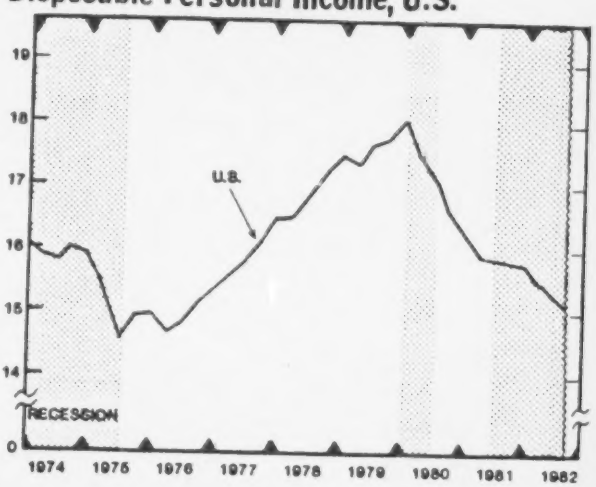
Plant Utilization Rates, Mfg. [1]



Ratio, Inventory to Sales, Durable Mfg.



Ratio, Consumer Installment Debt to Disposable Personal Income, U.S.



Technical Notes

For the reader's convenience the notes which follow are organized in sequence for the pages which appear in the statistical section. Each note corresponds to the footnote or reference notation for the given page.

* Wherever an asterisk appears the data is seasonally adjusted.

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1/ Four percent is a generally agreed upon criteria for measuring full employment. It allows for the movement of persons between jobs. Labor Force Unemployment Rate less four percent, based on officical estimates.
2/ Estimated worker hours expended in nonfarm payroll employment as a percent of potential worker hours assuming that each member of the nonfarm labor payroll labor force was employed at a standard rate of 40 hours per week.

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1/ The handbook unemployment rate is the estimate of unemployment prior to the Current Population Survey (CPS) adjustment.

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1/ In billions of dollars at an annual rate.
2/ The contribution to total Personal Income of wages, salaries, and other labor income. Percent change entry in Labor Income Impact is the percent that the change in labor income comprises of the change in total Personal Income. The is not available for Minnesota on a quarterly basis.
3/ The figure for the quarter is the contribution to total Personal Income of proprietor's rental, dividend, and interest income. The percent change entry in Property Income Impact is analogous to the Labor Income Impact described in 2/ above.
4/ The contribution to total Personal Income of transfer payments (unemployment compensation, AFDC, etc.) The percent change entry is analogous to the Labor Income Impact in 2/ above.
5/ In dollars at an annual rate.
6/ In dollars per week.
7/ Real average weekly earnings are the average weekly earnings of production workers in manufacturing divided by the CPI.
8/ Annual data.
9/ Value is revised CPI. (See "Program Notes," P. 6, First Quarter 1978 Review.)

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1/ U. S. data annualized in thousands. Source: Bureau of the Census.
2/ Base Year is 1967. Source: Federal Reserve Board
3/ Totals may not add due to rounding.
4/ Values shown in percent change columns are deficit as percent of GNP for period citied.
5/ Source: Federal Reserve Board.

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1/ Source: Federal Reserve Board.

Available Publications

Nonagricultural Wage & Salary Employment, Hours & Earnings, January 1974 - January 1982, Minnesota (June 1982)

Employment, Hours, and Earnings, 1970-1982, Minneapolis-St. Paul Area (June 1982)

1980 Occupational Employment Statistics in Minnesota (May 1982)

Minneapolis-St. Paul SMSA Employment Outlook to 1985 (March 1982)

Review of Labor and Economic Conditions and its Monthly Supplement (Recent Issues)

Statistical Supplement to the Annual Report of the Department of Economic Security (September 1981)

Unemployment Compensation Program Statistics: Total Wages, Taxable Wages, Contributions Due, and Benefits Paid, 1950-1978 (April 1980)

Minnesota Employment and Wage data by County (First Quarter 1982) Limited number available for 1975-1981

Average Covered Employment & Wages by Economic Region for the Calendar Year 1981 by two Digits of Industry (also available for 1976-1980)

Occupational Hiring Patterns in Minnesota (October 1981)

Characteristics of Unemployment Insurance Claimants, 1981 (March 1982)

The Economic Outlook for 1982 (February 1982)

Minnesota Labor Market Information Directory (April 1982)

1982 Minnesota Salary Survey by Area (August 1982)

1982 Minnesota Hospitals and Nursing Homes Salary Survey (September 1982)

1982 Minnesota Wage Data by Industry and Size of Firm (September 1982)

Labor Market Information Summary for 1982 for Minnesota (August 1982), Minneapolis-St. Paul SMSA (May 1982), St. Cloud SMSA (May 1982), Duluth SMSA (August 1982), and Rochester SMSA (August 1982)

These publications are available upon request while supply lasts.

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